

UNITED STATES PATENT OFFICE

CHARLES E. McMANUS, OF NEW YORK, N. Y., ASSIGNOR TO CROWN CORK & SEAL COMPANY, INC., OF NEW YORK, N. Y., A CORPORATION OF NEW YORK

TIN-PLATE-SPOTTING MACHINE

Application filed June 27, 1925. Serial No. 40,125.

My invention relates to tin plate spotting machines, and more particularly to a machine adapted to apply spaced spots of adhesive material upon tinned sheets for use in the manufacture of bottle caps of the crown type.

By one method of producing bottle caps of the character above referred to, a cushion disk of cork, or composition cork, is secured within a metal shell having a fluted skirt, by means of a resinous cement which is made tacky so as to act effectively as an adhesive, either by the application of heat to the shell while in the assembling machine, or by the application of a solvent to the resinous cementitious material and the driving off of the solvent from the cement by the application of heat. Irrespective of the manner of making the cement tacky, the cement, as the metal shells are delivered to the bottle cap assembling machine, is in a hard dry state, baked directly upon the tin of which the shell is formed, and is limited to a spot of substantially the area of the inner side of the top of the shell.

While in the bottle cap art, spotting with cement is old and well known, this method has not been used to any material extent because of the difficulties of limiting the area to which the cement is applied, so that this material will not foul the dies in the punch press used in making the caps, or interfere with the lubrication of said dies which is necessary to the economical production of the shells.

While a very thin coating of adhesive is required, nevertheless by methods and machinery heretofore used, there has always been extreme difficulty in limiting the operative area of the surface used for applying the cement to the tin sheet. It has been attempted to use ordinary planographic printing surfaces for spotting tin sheets for the purposes above described, but machines using such surfaces have been found unsuited for the work, since the wetting operation incidental to such presses, is not effective when using resinous or like cements, and the cleaning of the plates and of the offset planographic surface is extremely difficult, and requires so much time as

to materially reduce the output capacity of such a machine.

With the above conditions in mind, I have devised a machine so constructed as to permit the control of the area of each spot of cement and ensure uniformity in the area of all spots on each tin plate while permitting a continued operation of the machine at its maximum speed.

In a machine embodying my invention, no such fouling of the spot applying member can occur as to result in any material variation in the quantity of adhesive contained in each spot or the area of the spot, and as a result of this condition, a continued running of the machine is possible.

The resinous cement as used in the machine, while viscous, is nevertheless much thinner than printer's ink, and requires merely a distributing thereof upon rollers, and no cutting or working as in a printing machine. In fact the resinous material entering into the adhesive, contains a solvent which prevents the hardening thereof in and about the spotting machine, the solvent subsequently being driven off from the adhesive in an oven so that the spots of adhesive upon the tin plates are dry when these plates are fed to the punch presses in which the metal shells are formed.

The construction of the spotting elements is such as to ensure uniformity in pressure conditions between every point of each element and the tin plate, while avoiding any material expansion and deflection of this element as a result of such pressure. In actual practice, each tin plate will have hundreds of these spots applied thereto, and the construction of the spotting member is such that while the elements thereof which apply the adhesive to the tin plate are of flexible material, nevertheless, each of these portions is rigidly supported so as to check any material expansion thereof under the pressure incidental to the applying of the cement to the tin plate, and also rigidly supported in relation to adjacent similar portions, and to the cylinder carrying all of said portions, so as to ensure accuracy in the positioning of all of the spots upon the tin plate.

The machine of my invention is essentially